
In re Application of: Teodorovich, Mishko

Group Art Unit: 3635

Serial No.: 10/730,414

Filed: 12/08/2003

Examiner: Kwiecinski, Ryan

For: Door and window sill pan with drain

Commissioner of Patents and Trademarks
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Via EFS-FILE

**AMENDED DECLARATION OF COMMERCIAL SUCCESS AND LONG-FELT
NEED UNDER RULE 1.132**

Dear Examiner Kwiecinski:

My name is Mishko Teodorovich.

Background and Expertise

I am an engineer, with a degree Master of Science in Engineering, a home-builder and an expert on water intrusion. I am familiar with products and techniques for water intrusion prevention at doors and windows. I have testified as an expert witness in claims and litigations in building industry regarding water intrusion and related damages on residential and commercial buildings. I was an instructor at Texas Tech University, for a Residential Failure Analysis class, with focus on water intrusion, construction defect and best methods to avoid water intrusion problems. I have provided solutions for window and door installation for numerous customers in building industry. I am on the Fenestration Manufacturers Installation Committee.

The market need to prevent water intrusion and mold growth

Since the oil crisis in 1970s, the US has been faced with increasing need to reduce dependence on foreign oil by reducing energy consumption. Due to over 50% of oil consumption in US used to heat and/or air condition the buildings, increasing the energy efficiency of the buildings continues to be priority over the last 50 years, and we can expect this trend to continue to be a priority in the foreseeable future. In addition, building industry is increasing the use of more sustainable building materials such as recycled cellulose-based materials, like paper-backed drywall, MDF instead of natural wood, cellulose insulation, and other similar products. To summarize, during the last 50 years we have witnessed increased energy efficiency of buildings and increased used of recycled cellulose-based products, and we expect this trend to continue during the next 20 – 30 years. The implications of increased energy efficiency is that any moisture that accumulates in the wall cavity will take much longer to dry, and re-occurring moisture may not dry at all. Building materials that are made from recycled cellulose-based materials have much higher sensitivity to liquid moisture causing microbial growth then for the natural wood, or masonry materials. Microbial growth, i.e. toxic mold, in buildings can make buildings unsafe for human occupancy and therefore unacceptable.

Current best construction practices are based on zero tolerance for water intrusion

Buildings are more sensitive to water intrusion now than in the past, and we can expect that future building will be even more sensitive to water intrusion than current buildings. Methods and products used to protect buildings from water intrusion and related damages need to be more effective than in the past, more user-friendly, cost effective and durable. The building industry is looking for best practices and methods that are based on zero tolerance for water intrusion. Builders have long term liability for water intrusion and related damages and building industry is looking for effective and durable products which can be guaranteed for 10 years or more.

Buildings need sill pans in door and window rough openings

As witnessed by numerous claims and litigations, one of the most vulnerable areas for water intrusion is around windows and doors. Water accumulates at the bottom of

windows and doors, underneath window sill and door sill. If this water is not managed properly, it can create significant damage to the building, and in some cases the repair cost can exceed the value of the building.

Problems with prior art sill pans- lack of drainage, support, durability, and cost

The use of sill pan installed underneath a window or a door sill to evacuate this water is known from the past. The problem with existing sill pans is the lack of effective drainage, a lack of proper support for windows and doors, and a lack of durability to provide protection over 10+ years. Due to these issues the usage of a sill pan in the past was relatively small.

Due to much higher sensitivity of current buildings to water intrusion, a sill pan with more effective drainage is needed to effectively drain liquid moisture to the exterior. Introducing a drainage slope in the sill pan introduces a new need, which is to properly support the window or door, and to have the mentioned slope properly oriented, with unobstructed drainage path, and integrated with the rest of the building envelope. In order to have a commercial success, the sill pan must be easy to use and the cost must be as low as possible.

I invented the SureSill™ Sloped Sill Pan™ and related products to address these deficiencies and needs of the market.

Competitor- Jamsill

Prior to the introduction of the SureSill Sloped Sill Pan, the most successful sill pan was a non-sloped pan sold by Jamsill, Inc. According to the Jamsill website (www.jamsill.com) the company has sold over a million pans in over 20 years. After the introduction of the SureSill Sloped Sill Pan, Jamsill began selling a sill pan with “sloped weep areas”.

Competitor – Wark sloped sill pan

The Wark sill pan has been available since 2003 or before. It is reported to be available in only one US location - in Seattle WA, with sales reported only for various projects in the northwestern US and neighboring areas in Canada. It has only three reported sizes that are used for vinyl windows.

The Wark sill pan does not have a “continuous” support, and is used for vinyl windows only - not for hinged doors. The lack of continuous support can lead to twisting and warping of wood windows and door sills. In addition, a door sill typically takes the weight of persons stepping on the sill and various weights like wheelbarrows, dollies, and other means of transporting bulky items like furniture, pianos, etc. over the door sill. Door sills are designed for continuous support underneath. Without continuous support, damages are likely to occur on door sills or to have “wobbly” sills. The problem with high proximity of “*window supports*” in Wark’s device which could make them close to a continuous support is increase in cost of both material and assembly expense of having additional supports; therefore the device is not a commercially viable solution. In addition to not having continuous structural support, this poses a problem or large open space underneath the window sill or underneath door sill prone to infestation of small animals, water infiltration due to wind driven rain, and energy loss due large open space. Windows and doors are not designed for this configuration.

By contrast, the current invention provides for continuous support ridges and occasional cuts for drainage.

Other patents cited

The cited Burk patent does not show drain channels in the front ridge for water to be drained to the exterior. The water would just accumulate, and corrode the metal. It can also leak through the seams as they are just folded metal. Burk patent is not practical for supporting door sills because it has only one front supporting ridge, which would not work for a door sill. I am not aware of any sill pan product based on the Burk design.

The cited Bazurk patent, the Headrick patent, and the Massey patent all describe door sills only or door sill assemblies, and not a sill pan.

Suresill Sales and Market Share

SureSill was first available in April 2004, and it's currently available in all 50 states in USA in over 2,000 locations. We have sold over 400,000 individual units in 4 years since we had SureSill first available. SureSill is available through major multi-billion dollar suppliers of building materials such as Stock Building Supply, Hope Lumber, BMC West, Hutting, TM Cobb, 84 Lumber, ProBuild, and others. SureSill is also available through Home Depot, and other home improvement centers. SureSill is used for aluminum, vinyl, and wood windows, entry doors, patio doors, sliding doors, in both residential and commercial construction.

SureSill is the only sill pan in the "Exterior Door Installation Guidelines" by Stock Building Supply, a multi-billion dollar distributor of building materials with over 300 locations in US.

Although SureSill, Ltd. does not sell directly to builders but to distributors only, our distributors have reported that SureSill is being sold to major national home builders such as: Toll Brothers, D.R. Horton, Ryland, Pulte, Centex, and others.

The Energy Design Update (EDU), July 2004 Issue article in Appendix B2 states "It is due to these features that SureSill quickly became the number one sill pan on the market." EDU refers to "the slope to the exterior and the continuous support achieved by longitudinal support ridges" as the features due to which the SureSill "quickly became the number one sill pan on the market" It is clear that SureSill commercial success is due to the design change of the current invention. SureSill has the largest market share then any other sill pan.

Product Recognition (Reviews and Endorsements)

Due to its design features, SureSill has been called “The Cadillac of Sill Pans” by Energy Design Magazine, while evaluating other sill pans on the market, April 2006.

SureSill Sloped Sill Pan is the only sill pan published in California Builder’s Guide to Reducing Mold Risk, published by California Energy Commission, April 2006.

TLS Labs, the Independent Testing Lab: “The SureSill is high performance system that will be an asset to any builder serious of keeping water out of the homes he builds”

DuPont, the Fortune 100 company, and industry leader, for weatherization and building envelope products, such as Tyvek®, FlexWrap™, StraightFlash™ etc. has endorsed SureSill Sloped Sill Pan with the following language: “DuPont recommends the use of the SureSill™ Sloped Sill Pan™, manufactured by SureSill, Ltd, on all exterior doors and in certain applications on windows. This best practice ensures continuous support with positive slope to the exterior. ...”

SureSill Features and benefits as related to the claims

Continuous support. SureSill provides positive slope to the exterior and lateral support ridges for a length of up to the entire rough opening width, while having occasional cuts in ridges for directional drainage. Windows and doors are designed to have continuous support underneath. Claim 1 describes continuous or close to continuous support features of the current invention. This support is provided by the “lengthwise oriented rear sill support” and the “lengthwise oriented front sill support”

Effective Draining Mechanism. Due to longitudinal ridges that provide both strength and continuous support, SureSill is known as the “rigid sill pan” that is suitable for both doors and windows. Often, the surface underneath the door/window is not leveled, and in the case of concrete foundation the surface is often uneven and can have a backward slope. Because SureSill is a “rigid pan” we recommend installing the SureSill plumb and level by inserting the shims underneath SureSill, and then placing the door/window on the pan. Installing the pan leveled provides directional drainage to the exterior because

the recessed slope is properly oriented. [By contrast, other sill pans recommend having the rough opening “plumb and level” prior to sill pan installation which is frequently not done because it is unrealistic to expect that the rough opening will be re-framed or the foundation re-leveled prior to sill pan installation. This leads to other sill pans being installed on a slanted surface which causes the sill pan to hold the water rather than drain it to the exterior.

Lower Cost of Product. An extruded base, with a single extrusion, without injected components is less expensive to manufacture than injected plastic. This makes SureSill less expensive while providing higher quality product.

Lower Cost of tooling. The cost of tooling (and time to produce it), for extrusion (extrusion dye) is a fraction of the cost of tooling for injection molding (injection mold). This cost difference increases with length, and an injected sill pan base over 2 - 3 feet in length is too expensive and uncompetitive in comparison with extruded base of similar size and material thickness.

Sill Pan Length. The extruded base makes it possible to have long lengths like 12 feet or 16 feet without joints. Joints are weak points for possible leaks and require additional labor in order to seal them.

Easy Installation. Door/window rough opening come in many sizes between one foot and typically up to 12 feet and the exact size is often determined by the tradesman on the job site. SureSill extruded base is cut-to-fit.

Reduced Inventory. With lengths in 80 inches and 154 inches SureSill has minimal number of SKU which makes it very convenient for both distributors and end users. Other sill pans have 10 – 15 SKUs per size.

Rigidity and strength. Longitudinal ridges provide the rigidity which contributes to the overall quality and strength of the sill pan. This is particularly important for longer

lengths. Additional longitudinal ridges can be easily added for more rigidity and strength if needed.

Lock-in joints with end caps. Extruded ridges that vary in width from top to bottom allow for engineered “lock-in” feature with end caps. End caps can slide in and out longitudinally while aligned with the base. Once assembled, and placed into rough opening, the end caps can not be misaligned or disassembled from the base unless the sill pan is removed from the rough opening and end caps are allowed to slide out longitudinally. This allows for a strong joint and proper alignment between the base and the end caps. This is very important in order to have a waterproof connection between the base and the caps. When installing other sill pans, such as Wark or Jamsill, end caps are just placed on top of the base and the adhesive is responsible to both to keep the alignment and to provide a waterproofing connection. This requires larger overlapping surfaces with end caps, which makes end caps larger and more expensive. The pressure of the door/window can easily misalign the caps from the base which would typically cause leaks. This has been reported to us by numerous customers and have made it relatively easy for customers to accept SureSill. For other pans it is recommended to wait until the adhesive has completely bonded which can be up to couple hours or more. This adds to labor time. Because of the engineered joint SureSill end caps stay aligned with the base even if the adhesive did not bond, and adhesive can bond after the installation. SureSill does not require waiting and installation can proceed immediately. SureSill end cap have smaller overlapping surfaces with the base, which makes them less expensive to both manufacture and ship. This results in SureSill end caps being over 50% cheaper than Wark or Jamsill.

Appealing finished look. In most door applications the rear up-stand is visible. Homeowners have expectations of finished surfaces to look nice and to blend well with the rest of the finishes. Joints and splices do not look appealing. SureSill end caps have 1” or less overlap with the base and the joint is hidden behind the door/window casing. When installation is complete, SureSill provides a single clean edge without visible seams.

Faster Installation of Doors/Windows. Leveling a sill pan first reduces labor for door/window installation and number of installers needed, because it is much easier faster to level SureSill than a heavy door or window. Other sill pans recommend installing the sill pan on the surface and then placing shims inside the pan to level door/window. This is both time consuming and less practical comparing to SureSill. If the pan is not leveled or its slope properly oriented, it can actually hold the water instead of draining the water. This standing water can be absorbed by the door/window sill and frame causing mold and decay, and can also find its way to the wall cavity and damage the building. In addition, placing leveling shims inside the sill pan is very difficult when door/window has nailing flanges. A combination of the rear up-stand leg on the sill pan and the nailing flange on the front of the sill pan makes it practically impossible to slide shims in-and-out without removing the door/window first. This means that for any adjustment door/window needs to be removed and then placed back in the rough opening. This makes leveling arduous and time consuming. Shims for adjusting SureSill can easily slide in and out underneath SureSill from the back side and the pan can be leveled before placement of the door/window. Placing door/window on the plumb and level pan makes the door/window plumb and level.

Warranty. Due to strength and durability provided by extruded base with length-wise support and lock-in end caps, SureSill has 10 Year labor and material warranty. Other sill pans including Wark have up to 3 year warranty, with product replacement only, while some sill pans have no explicit warranty or have a disclaimer that explicitly says there is no warranty.

Claims

The independent claims of the current invention are listed below with emphasis added. The extruded lengthwise front and rear sill supports of the current invention provide the key rigidity, economy of manufacture, and a continuous or near continuous support discussed in the product features. The ability to cut the extruded base to a desired length

and attach the first and second end pieces provides the ability to precisely fit the sill pan assembly to an actual door or window opening.

The sloped sill pan has enough rigidity so that the sill pan can be shimmed as necessary to be installed plumb and level, which allows for proper orientation of the slope and provides effective drainage. In addition, the current invention allows for high quality but low cost manufacturing and relatively low cost of a sloped sill pan to the end user. High durability of the current invention allows for long warranty as needed by the building industry.

Claim 1

The product has all of the elements of claim 1. One aspect of the product is the lengthwise supports. The lengthwise supports provide continuous or near continuous support for a door or a window sill and frame. In addition, this orientation of supports provides the needed strength to the sill pan for door support and permits the product to be extruded by a single extrusion. Extrusion permits the products to be manufactured and sold at a lower price than competing products. The extrusion also permits longer sections to be purchased and easily cut to a desired length to protect the rough opening width. This feature further reduces cost by lowering the number of separate stock items and provides additional versatility to the builder.

1. (currently amended) A sill pan for **protecting the rough opening width of a window or door, the sill pan** comprising

- a sill pan base having a length and a width, the sill pan base comprising
 - a first end,
 - a second end
 - a sloped upper portion,**
 - a rear wall,
 - a front flange,
 - a lengthwise oriented rear sill support, and
 - a lengthwise oriented front sill support comprising a plurality of drain gaps, **such that the rear sill support and the front sill support provide continuous or near continuous support to the window or door;**
- a first end piece comprising
 - an end piece base having a top surface, a bottom surface, a first side edge,
 - a second side edge, a rear edge, and a front edge, such that the end piece

base is attachable to the sill pan base in the proximity of the first end of the sill pan base and the first side edge of the end piece base,
 a side upward lip projecting from the top surface of the end piece base along the second side edge, the side upward lip extending from the front edge to the rear edge of the end piece base, and
 a downwardly extending front lip projecting from the top surface of the end piece base along the front edge, the downwardly extending front lip extending from the first side edge to the second side edge of the end piece base; and

a second end piece comprising

an end piece base having a top surface, a bottom surface, a first side edge, a second side edge, a rear edge, and a front edge, such that the end piece base is attachable to the sill pan base in the proximity of the first end of the sill pan base and the first side edge of the end piece base,
 a side upward lip projecting from the top surface of the end piece base along the second side edge, the side upward lip extending from the front edge to the rear edge of the end piece base, and
 a downwardly extending front lip projecting from the top surface of the end piece base along the front edge, the downwardly extending front lip extending from the first side edge to the second side edge of the end piece base.

Claim 10

The product is manufactured and installed according to the method described in claim 10 to cover the rough opening width. Extrusion permits the products to be manufactured and sold at a lower price than competing products.

10. (Previously presented) A method of manufacturing a sill pan comprising extruding a first sill pan base unit, the sill pan base unit comprising

a first end
 a second end
 a slanted upper portion,
 a rear wall,
 a downwardly extending front flange,
 a rear sill support, and
 a front sill support

such that the rear support and the front support on the first sill pan base unit are lengthwise in order to permit the first base unit to be manufactured by extrusion; cutting the first sill pan base unit to a desired length; affixing a first end element to the first end of the sill pan base unit; and affixing a second end element to the second end of the sill pan base unit.

Claim 18

The product has all of the elements of claim 18. The lengthwise supports provide continuous or near continuous support for a door or a window sill and frame. In addition, this orientation of supports provides the needed strength to the sill pan for door support and permits the product to be extruded by a single extrusion. Extrusion permits the products to be manufactured and sold at a lower price than competing products. The extrusion also permits longer sections to be purchased and easily cut to a desired length to protect the rough opening width.

18. (Currently amended) A sill pan for **protecting the rough opening width of a window or door, the sill pan** comprising

an extrudable sill pan base having a length and a width, the sill pan base comprising

a first end,

a second end,

a sloped upper portion,

a rear wall,

a upwardly extending rear sill support, and

a upwardly extending front sill support, such that the rear sill support and

the front sill support are oriented lengthwise on the sill pan base, such

that the rear sill support and the front sill support provide continuous or near continuous support to the window or door;

a first end piece, attachable to the sill pan base in the proximity of the first end of the sill pan base, the first end piece comprising

a horizontal tab which may be inserted between the rear support and the front support, the horizontal tab having a top surface aligned with the top surfaces of the rear support and the front support,

a recess for receiving and overlapping the first end of the rear wall,

a recess for receiving the first end of the rear sill support, and

a recess for receiving the first end of the front sill support; and

a second end piece, attachable to the sill pan base in the proximity of the second end of the sill pan base, the second end piece comprising

a horizontal tab which may be inserted between the rear support and the front support, the horizontal tab having a top surface aligned with the top surfaces of the rear support and the front support,

a recess for receiving and overlapping the second end of the rear wall,

a recess for receiving the second end of the rear sill support,

a recess for receiving the second end of the front sill support.

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Appendix A- Differences between a “sill” and a “sill pan”

1. ASTM E 2112-07

This is the ASTM published standard for Sill Pan. The American Society for Testing and Materials - ASTM International, is one of the largest voluntary standards development organizations in the world, a trusted source for technical standards for materials, products, systems, and services. Known for their high technical quality and market relevancy, ASTM International standards have an important role in the information infrastructure that guides design, manufacturing and trade in the global economy.

Definitions of sill and sill pan flashing are presented below from ASTM E 2112-07
Standard Practice for Installation of Exterior Windows, Doors and Skylights

3.2.121 *sill, n*—the horizontal bottom part of a window or door.

The “sill” is defined to be part of the window or door.

3.2.91 *sill pan flashing, n*—a type of flashing used at the base of rough opening to divert incidental water to the exterior or to the exterior surface of a concealed WRB.

NOTE 3. Sill pan flashing have upturned legs at the interior edge and ends of the rough opening to form a three-sided *pan*. They are intended to collect and drain water toward the exterior, including water that may enter through the window unit (for example, between the jambs and sill) or around the window (between the rough opening and the fenestration). The pan flashing must be integrated with other flashings and the window assembly to capture water that may otherwise penetrate to the sill framing and allow it to freely drain to the exterior. The window, flashings, and pan are to be sealed in a manner that reliably inhibits air and moisture flow to the interior.

Section 3.2.91 describes what a sill pan is, and that it must be integrated with the building envelope or “weather-resistive barrier” (WRB). According to this definition, the Baczuk sub-sill is not considered a sill pan because the Baczuk base is part of the sill and it does not collect or drain the water that enters around the door unit (between the jamb and the rough opening), and Baczuk is not integrated with the WRB.

Another structural difference is that the sill is exposed to the weather and the elements, while the sill pan is not. People foot traffic, carts, and other objects are in direct contact with the sill but not with the sill pan. The sill is visible from the exterior while the sill pan is not. The sill pan goes underneath the sill and this could not be reversed. The sill pan collects the water that goes through the sill and the frame or around the frame, somewhat like a liner of the rough opening.

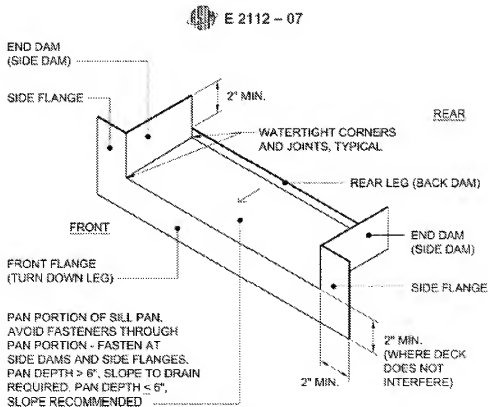
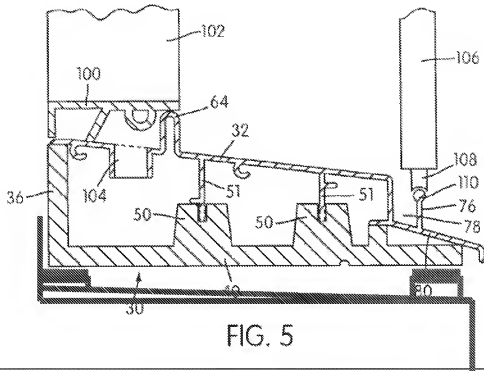


FIG. A3.4 Configurations of Typical Sill Pan Flashing—Isometric

2. Annotated Baczuk FIG. 5 showing sill pan



The annotated FIG. 5 above, shows Baczuk's sill **30** placed on top of a sill pan illustrated by the heavy red lines.

3. Dictionary definitions

"Sill" – Wikipedia

- In architecture, a **sill** is the bottom edge of a window or door
- In building construction, the bottom horizontal member of a wall or building to which vertical members are attached is called a **sill plate**. (This is also, confusedly, sometimes also called *the sill*.)
- The **sill** proper being the finished (leveled) area of a masonry or concrete foundation normally also prepared by imbedding large hold-down 'J' bolts (in concrete) or drilled for **Lags** (masonry or concrete) and **lag bolts** so the sill plate can be fastened to the foundations.

“Sill” – Miriam Webster Dictionary

A horizontal piece (as a timber) that forms the lowest member or one of the lowest members of a framework or supporting structure; as **a**: the horizontal member at the base of a window **b**: the threshold of a door

4. Endura website

Below is a published web catalog by Endura Products on the Sill and on the Sill Pan. This shows the Sill and the Sill Pan are completely different products. Endura is one of the largest Sill manufacturers in North America, and also distributes SureSill in North America, as complimentary product to Sills. We'll start by looking what sills are.

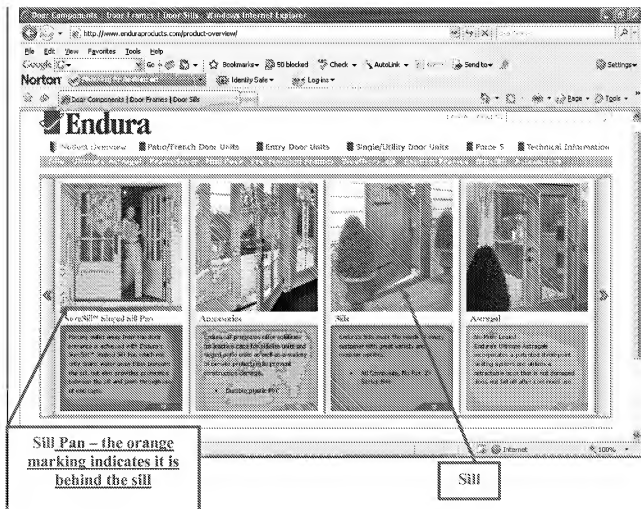


Fig. 1 “Sill Pan” and “Sills” are different products

Fig 2 Sill

Fig 2 Sill

[illegible]

The screenshot shows the Norton OutSiding website. The browser address bar displays the URL: <http://www.outsiding.com/product-overview/siding-outSiding.asp>. The website has a navigation bar with links like 'Home', 'About Us', 'Products', 'Contact Us', and 'FAQ'. The main content area features a large image of a window with a white sill and a cross-section diagram of a wall. A label 'Sill' points to the bottom of the window frame, and another label 'Runder OutSiding' points to the cross-section of the wall. The text on the page describes the benefits of the product, such as 'Available for both 2-Story (4 in. or 6 in.) and Traditional Siding' and 'Summer OutSiding Siding offers superior protection in high pressure areas and against weather conditions'. The right sidebar contains a 'Sidebar' section with links to 'Home', 'About Us', 'Products', 'Contact Us', and 'FAQ'.

Aluminum Door Sills - Aluminum Interior Sills - Door - Windows International of Aluminum

http://www.enduraproducts.com/product-overview/sills/interior-aluminum.aspx

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Google

Norton Identity Safe

Aluminum Door Sills - Aluminum Interior Sills - Door

AB Aluminum Sills

The all aluminum interior sills feature Endura's unique, notched integral seal design. This seal is a high profile design and can accommodate a standard or the back extended. The 4-1/2" is available in both low and high profiles.

Available in 2-1/2" and 4-1/2" heights, Endura's entire family of aluminum sills are offered in mild, bronze or brass finishes, and are available to accommodate most single, French, triple and operable systems. All aluminum sills allow for wood or composite and block or full substrates.

All aluminum sills are offered as adjustable or fixed styles with varying configurations.

Sills

- Endura
- French
- Triple
- Operable
- Adjustable
- Fixed
- Wood
- Composite
- Block
- Full

Aluminum Door Sills - Aluminum Interior Sills - Door - Windows International of Aluminum

http://www.enduraproducts.com/product-overview/sills/interior-aluminum.aspx

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Norton Identity Safe

Aluminum Door Sills - Aluminum Interior Sills - Door

Endura

French/Interior Sills - Entry Door Sills - Single/Entry Door Sills - Force II - Technical Information

Sills

French/Interior Sills - Entry Door Sills - Single/Entry Door Sills - Force II - Technical Information

AB Aluminum Sills

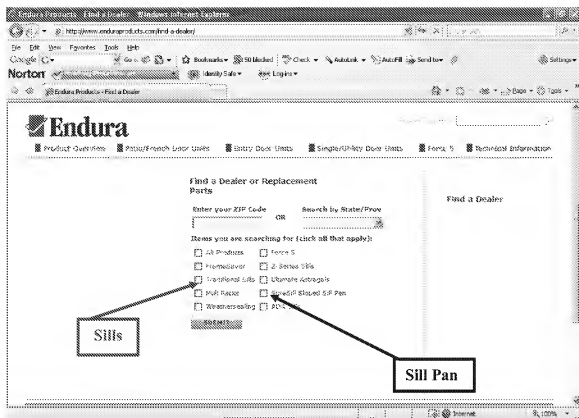
The all aluminum interior sills feature Endura's unique, notched integral seal design. This seal is a high profile design and can accommodate a standard or the back extended. The 4-1/2" is available in both low and high profiles.

Available in 2-1/2" and 4-1/2" heights, Endura's entire family of aluminum sills are offered in mild, bronze or brass finishes, and are available to accommodate most single, French, triple and operable systems. All aluminum sills allow for wood or composite and block or full substrates.

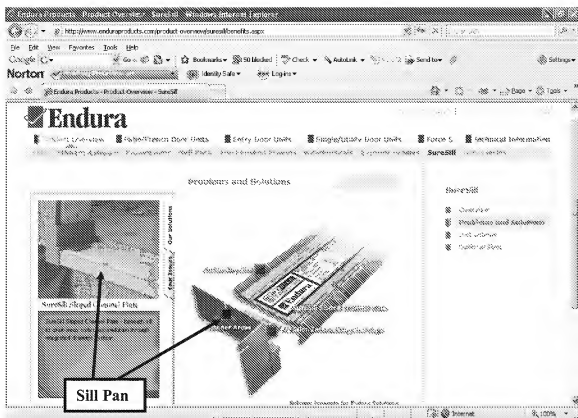
All aluminum sills are offered as adjustable or fixed styles with varying configurations.

Sills

- Endura
- French
- Triple
- Operable
- Adjustable
- Fixed
- Wood
- Composite
- Block
- Full



"Sills" and "Sill Pan" are listed as separate products on the search page. SureSill Sloped Sill Pan is clearly not considered a sill.



This is the SureSill™ Sill Pan. It is different then the Sill.

5. Jeld-Wen web Site

Below is a published web page by Jeld-Wen, <http://www.jeld-wen.com/resources/glossary/index.cfm> showing definitions of a "Sill" and a "Sill Pan". The Sill and Sill Pan have completely different definition and different task. Jeld-Wen is the world largest window and door manufacturer.



Sill

A main horizontal member forming the bottom of the frame of a window or door.

Sill pan

A three-sided box made of sheet metal flashing, this is what a window sits in on the rough opening. It is designed to catch water that infiltrates into the rough opening and divert it to the outside.

6. Web pages and brochure images by SureSill, Ltd

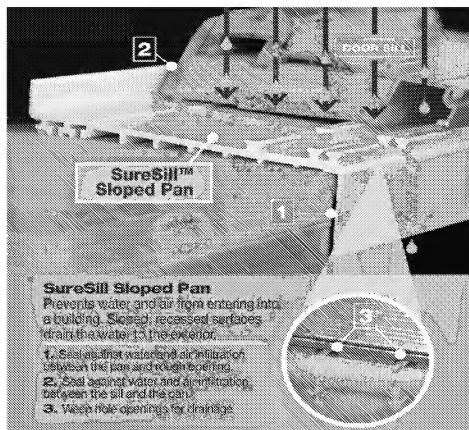
Below are published web pages and brochure images by SureSill, Ltd, the manufacturer of the Sloped Sill Pan™.

SureSill™ Sloped Sill Pan™
for Doors and Windows



SureSill™ Sloped Pan provides a level surface for installation of doors and windows and a sloped, recessed surface for draining water.





The Sill Pan is placed underneath the Sill. This clearly shows “Sill Pan” and “Sill” are different.

Appendix B- Evidence of long-felt need

1. California Builder's Guide to Reducing Mold Risk

The following observations show the long-felt need for effective solutions to water infiltration, and the importance of a sill pan as a component of the weather-resistive barrier. Fig 3.10 shows the long-felt need for a sill pan along the entire rough opening and for the sill pan to integrate with a water-resistive barrier. FIG. 3.11 is applicant's sloped sill pan.

These excerpts show that present invention meets the long-felt need for effective drainage, integration, and air infiltration and energy conservation. In addition, this publication clearly shows what a sill pan is and that it is not the same as sill.

A CALIFORNIA BUILDER'S GUIDE TO REDUCING MOLD RISK

A REPORT TO THE CALIFORNIA ENERGY COMMISSION

Contract Number 400-01-013

April 12th, 2006

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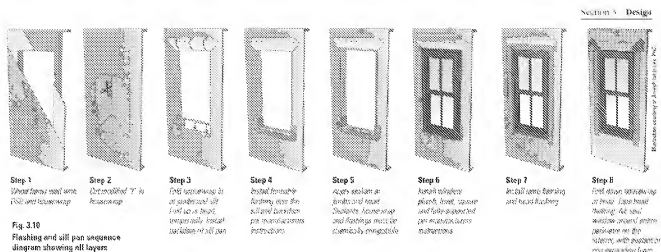
Integrating window flashing & sill pans with the water-resistive barrier

Dr. Joe Istiburek, the noted building scientist, has said that in his 30 years of consulting and building experience, he has observed that “there only two kinds of windows: windows that leak now... and those that will leak later.”

Secondly, the designer can design and clearly draw the integration between the four key elements that must all work as a system to exclude water: the window, the sill pan, the flashing and the water-resistive barrier.

Two aspects of window integration that have historically been weak in design documents are sill pans and flashing details.

Sill pan flashing, shown in figures 3.10 and 3.11, ensures that water getting through the window joints will be forced outwards to the drainage plane, where it can do no harm, instead of draining downwards into the wall, where the water would collect and eventually support mold growth on sheathing, insulation, framing and wallboard.



The importance of air seals under windows

The back dam and end dams of the sill pan are obviously critical components. They keep any leakage water from dripping into the wall at the edges of the sill. But sometimes overlooked is the importance of the *air seal between the bottom of the window and the sill pan*. Window manufacturers' testing has consistently shown that

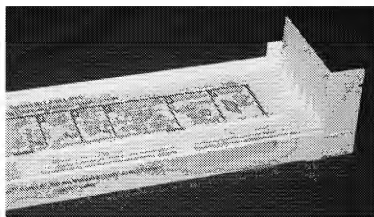


Fig. 3.11
Preformed sill pan with end dams and back dam

Sill pans can be prefabricated, as in this example, or formed in-place using peel-and-stick membranes. In both cases, it's very important for the designer to define, in 3 dimensions, exactly how the other flashings and water-resistive layers are supposed to connect with, or be placed under or over, the surfaces of the sill pans.

by sealing the space between the pan and the window with foam, the water exclusion performance of the system improves. When the wind can't blow through that slot, it can't drive water inwards over the back dam and into the wall.

Plus, there's an obvious energy benefit to keeping hot and cold winds from blowing into the home through all those slots all year long, even when it's not raining.

2. Energy Design Update (EDU), July 2004 Issue.

The following article on “Plastic Sill Pans” was published by Energy Design Update (EDU). EDU is a national Building Industry Magazine, focusing on energy, doors and windows, building envelope, etc. As further evidence of long-felt need, after this article, at the end of 2004, Endura dropped the sill pan described in the article as Endura Pan and is since then selling only SureSill.

The second paragraph states that “Since the 1980s the building industry has been on the lookout for an efficient sill pan.”

The third paragraph demonstrates the long-felt need for a sloped sill pan with continuous support (which means no occasional shims or other occasional support) for doors and windows.

The fourth paragraph notes applicant’s commercial success in addressing this long-felt need. **“It is due to these features that SureSill quickly became the number one sill pan on the market.”**

Fig. 10 praises design features of SureSill.

The SureSill description on page 14 describes the long-felt need for efficient sill pan, and notes that SureSill is the only sill pan with the slope and a continuous support, and it demonstrate the benefits of these features. The description shows that current invention (SureSill) is practical and it works in real life. The article clearly places the current invention above any other sill pan in meeting the long-felt need for integration with the weather-resistive barrier.

NOTE: Previously, the web catalog from Endura Products is shown and on Page 23 SureSill Sloped Sill Pan is shown as a part of Endura web catalog. The article below refers to “Endura Pan”, which is not the same sill pan as SureSill. After the publication of the article below, Endura Products has discontinued the “Endura Pan” described in the

article and started to distribute SureSill Sloped Sill Pan, which is the applicant's invention. This is another compliment showing that SureSill meets a long-felt need for efficient sill pan due to its design features. It also supports the arguments made in the article about SureSill.

Plastic Sill Pans

By now, many builders have learned the window/door mantra: There are two types of windows/doors – those that leak, and those that will leak. Until the 1980s, most builders assumed that any water leaking into a wall assembly would evaporate before causing damage. With tighter walls built since then, however, that is not true.

A sill pan collects water leaking around or through a window or door and drains the water out onto the vertical surface of the weather-resistive barrier (WRB). Since the 1980s the building industry has been on the lookout for an efficient sill pan.

Most doors and windows are designed to have a continuous support underneath both the sill and the frame so that the weight would be completely and evenly distributed to the structure below. The ideal sill pan would have a slope for efficient drainage, and a continuous support underneath the sill and the frame.

Installing a manufactured sill pan is easier than making one on site. For years, the market for sill pans was dominated by the Jamsill Guard. Now three other brands are offering sill pans: Astro Plastics, Endura and SureSill. SureSill has a unique design and much needed features that the building industry needs. It is due to these features that SureSill quickly became the number one sill pan on the market.

Can Sill Pans Be Used With Flanged Windows?

Many windows installed in new US homes are flange windows. Window flanges were designed to speed

up window installation, not to manage wind-driven rain. Since they impede drainage from the rough sill, bottom flanges are particularly perverse.

Although some manufacturers advise that sill pans are not compatible with flanged windows, all of the sill pan manufacturers contacted for this article disagree. In general, they advise that their products will work with flanged windows as long as the installer remembers not to caulk behind the window's bottom flange.

While this advice makes perfect sense, it goes against the installation instructions provided by many window manufacturers. Moreover, omitting caulk from under the bottom flange also violates the requirements of sections 8.1.1.3, 1.2 and 8.1.1.3.3.3 of the ASTM window installation standard, ASTM E2112.

Among members of the ASTM E2112 committee, the requirement to caulk bottom flanges has been a matter of controversy for some time. According to committee chairperson Barry Hardman, a revision to the standard allowing uncaulked bottom flanges has been proposed and is likely to be approved within a year.

Jamsill Guard

The Jamsill Guard is made of ABS plastic (see Table 4). Although the pan is flat, it includes two weep areas near the corners that are lower than the pan bottom. Per manufacturer, builders who prefer a sloped pan can shim the rough sill before installing the Jamsill Guard, which is impractical in many cases.

Table 4—Comparing Sill Pans

	Material	Seam sealer	Flat or sloped?	One piece or three pieces?	For doors or windows?
Astropan	PVC center section, polypropylene end caps	Lexel caulk	Flat	3 pieces	Doors and windows
Endura door sill pan	PVC	PVC cement	Flat	One piece	Doors only
Jamsill Guard	ABS	PVC cement	Flat	3 pieces	Doors and windows
SureSill	PVC	PVC cement	Sloped	3 pieces	Doors and windows

Table 4. At least four US manufacturers make sill pans for doors or windows.

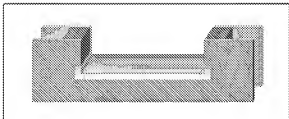


Figure 8. The Astropan is an inexpensive 3-piece sill pan that can be used under windows or doors.

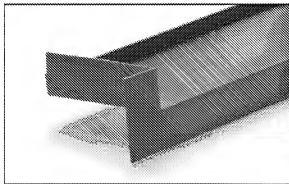


Figure 9. The Endura sill pan is designed for doors, not windows. It is a one-piece unit that requires no job-site assembly.

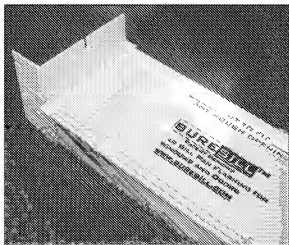


Figure 10. When installed on a level rough sill, the SureSill provides a sloped drainage surface under a window frame or door threshold. The raised ridges at the front of the sill pan provide level support for the window frame. These ridges are periodically interrupted by drainage scuppers.

The Jamsill Guard is sold in kits sized for specific window or door openings, ranging from 2'8" to 12'0" in 6-inch increments. Each kit includes three pieces (two

end caps and a middle piece) are assembled and glued together on site to fit the rough opening.

Jamsill Guards are sold in a variety of widths; for windows, builders usually choose the 4 ³/₁₆-inch width (for 2x4 walls) or the 6 ³/₁₆-inch width (for 2x6 walls). A Jamsill Guard for a 36-inch-wide opening costs about \$15 for a 2x4 wall, or about \$23 for a 2x6 wall.

Astropan

The Astropan is a three-piece sill pan manufactured by Astro Plastics (see Figure 8). The pan, which can be used for either doors or windows, is made from two different types of plastic—a PVC center section and polypropylene end caps. The manufacturer specifies that the separate sections of the pan should be joined with Lexel caulk. Lexel is manufactured by Sashco Sealants; the manufacturer describes the product as "a co-polymer rubber-based sealant." It is unclear how long this caulk will remain waterproof. Sashco warns that "Lexel should not be used in areas of continuous submersion (i.e., aquariums or swimming pools)."

The Astropan is a flat sill pan with a ¹/₂-inch-high interior lip. Because the center (straight) extrusion overlaps the end caps, a weep area is created at each corner. The bottom of these weep areas is lower than the center section. The overlap exists on the vertical drip lip as well; at the weep areas, the drip lip is somewhat recessed from the center portion of the lip. As a result, there is a slight air gap between the bottom window flange and the drip lip at the weep areas.

The Astropan is available from the manufacturer in two widths (4 ³/₁₆ inches for 2x4 framing and 6 ³/₁₆ inches for 2x6 framing) and two lengths (38 ¹/₂ inches and 74 ¹/₄ inches). The center section can be cut to fit with snips or a hacksaw as needed. The Astropan is inexpensive; a 38 ¹/₂-inch long sill pan for a 2x6 wall costs about \$6, including a tube of caulk.

Endura Products

Endura Products makes PVC sill pans for doors but not for windows (see Figure 9). Most Endura sill pans are one-piece units which makes it difficult to fit every rough opening. Since Endura sill pans are not adjustable, rough openings have to be framed to tight tolerances: if an opening is too wide, it will be difficult to integrate the jamb flashing with the sill pan, while if an opening is too narrow, the sill pan just won't fit.

The Endura door sill pan comes in two widths (4 ³/₁₆ inches for 2x4 framing and 6 ³/₁₆ inches for 2x6 framing), sized for doors ranging in width from 2'8" to

6'0". Endura also sells door sill pan in sections which can be site-assembled for openings 6'-12 feet wide.

SureSill

Most sill pans do a good job collecting water from leaks and protecting rough sills. However, since most of them are flat rather than sloped, they are not efficient at directing all the water toward the exterior.

The SureSill pan is the only sill pan that, when installed on a level rough sill, provides a sloped drainage surface and a continuous support underneath the sill and the frame (see Figure 10, Page 13). The SureSill pan is site-assembled from three pieces. The center piece is a PVC extrusion that includes ridges providing level support for any window or door. These ridges are located so they do not interfere with drainage. The ridges keep the window sill above the surface of the sloped sill pan. These details promote drainage and drying, and prevent capillary absorption of moisture by the window frame.

SureSill's unique design of a drainage slope combined with longitudinal support ridges provides efficient drainage to the exterior and a continuous support along the entire rough opening. This is what the building industry needs to efficiently handle window and door leaks.

SureSill is available in two widths (4 9/16 inches for 2x4 walls, and 6 9/16 inches for 2x6 walls). The center sections are available in two lengths (6'-8" and 12'-10"). Once the SureSill extrusion is cut to fit by the installer, the two end-caps are joined to the center section with PVC cement.

The SureSill is the Cadillac of sill pans, efficient for any opening size, and easy to integrate with the WRB.

For more information, contact:

Astro Plastics, 10350 Ashler Avenue, Rosemount, MN 55068, Tel: (800) 952-7876 or (651) 322-1055; Fax: (651) 423-6116; Web site: www.astroplastics.com.

Endura Products, P.O. Box 8908, Greensboro, NC 27419 Tel: (800) 334-2006 or (336) 668-2472; Fax: (336) 668-4478; Web site: www.enduraproducts.com.

Jamsill, P.O. Box 485, Talent, OR 97540, Tel: (800) 526-7455 or (541) 488-7470; Fax: (541) 488-7472; E-mail: info@jamsill.com; Web site: www.jamsill.com.

SureSill, 6410 Yampou Drive, Austin, TX 78759, Tel: (512) 231-9469; Fax: (512) 502-0007; E-mail: info@suressill.com; Web site: www.suressill.com.

3. ASTM E 2112-07.

The ASTM standard shows that long-felt need is very broad and it will continue into future. The standard states that "Sill Pan" flashing shall be integrated with a weather-resistive barrier. The Baczuk sill has no integration with a weather-resistive barrier.

5.16.3 Use of Sill Pan Flashings—This practice recommends that sill pan flashings be used under all windows and doors, except where wall construction details incorporating fenestration drainage systems are provided by the building designer, or where wall construction details are specifically provided by fenestration manufacturers' installation instructions. Where used, sill pan flashings shall be integrated with the wall's weather resistive barrier in shingle-lap fashion (see Fig 5). The sill pan flashing shall be continuously sealed to the weather-resistive barrier.

4. Minnesota Building Code

Below is a section from the Minnesota Building Code requiring sill pan (called sill pan flashing here):

R703.8.1 Sill Pan flashing of windows and doors. A sill pan flashing shall be provided under all exterior windows and doors. Sill pan flashing shall be: (a) sloped to drain water to the exterior surface of a weather-resistive barrier or flat with sealed back dam and side dams to prevent re-entry of water into the wall cavity or onto interior finishes, and (b) maintain the thermal envelope of the building. Pan flashing made from metal must be thermally isolated from interior finishes.

Exceptions:

1. Windows or doors installed in accordance with the manufacturer's installation instructions which include an alternate flashing method.
2. Windows or doors in detached accessory structures.
3. Skylights, bow or bay windows.
4. Doors required to meet accessibility requirements that would prevent the installation of pan flashing.
5. Repairs or replacement of existing windows and doors.
6. When a method is provided by a registered design professional.

5. Baczuk (US 6,371,188)

Baczuk (US 6,371,188) whose provisional patent application was filed in June 1999, describes the need for improved sealing of door sill assemblies in the following passages (emphasis added).

“One of the traditional problems faced when constructing door assemblies that mount within a doorway on a building exterior is preventing water and other liquids from flowing through the door frame assembly, specifically at the lower edge thereof where the door sill assembly is located. Conventionally, door sill assemblies have used a sub-sill that is capable of receiving water and draining it out to the building exterior and the tread is provided with a weep system that allows water to flow into the sub-sill. **One problem with these conventional arrangements is that the side jambs of the frame are attached to the outside of the sub-sill ends, thereby creating a potential for water to flow between the sub-sill ends and the side jambs.** To solve this problem, gaskets or similar rubber seals have been provided between the side jambs and the sub-sill to prevent such leakage. These gaskets add extra cost to the door frame assembly and may still not solve the potential leakage problem if they are improperly positioned between the sub-sill ends and the side jambs. Water that leaks between the door sill assembly and the door panel can flow into the building interior and create puddles or damages floor treatments, such as carpeting. Also, some of this water may possibly leak between the door sill assembly and the building floor into the building sub-floor where over time it can cause the wood components in the building sub-floor to rot, thereby incurring the high expense associated with tearing up the building floor and re placing sub-floor components.

Another problem with some known door sill assemblies is that the sub-sills have a low fluid capacity. In high wind conditions, wind can blow into the drainage system and increase the pressure inside the sub-sill. Without a sufficient volume to accommodate this increase in pressure, the sub-sill may not function effectively to drain the fluid therein. Further, in arrangements that use grooves to guide the water to the drainage openings, such as the assembly disclosed in U.S. Pat. No. 3,900,967, the wind may displace some of the fluid and force it back out through its weepholes.

Consequently, there exists a need for a door frame assembly that includes an improved high volume door sill assembly that functions effectively to prevent water from draining into the building sub-floor. To meet this need, one aspect of the present invention provides a door frame assembly constructed and arranged to be installed in a doorway located at an exterior of a building **in conjunction with a door panel movable between open and closed positions with respect to the doorway.** The door sill assembly comprises a **sub-sill** having a peripheral wall including a bottom wall, first and second end walls extending generally

upwardly from the bottom wall at opposing end portions of the sub-sill, a rear wall extending longitudinally between the end walls, and a front wall extending longitudinally between the end walls opposite the rear wall. The walls of the sub-sill provide interior surfaces that cooperate to define an open fluid-receiving trough extending between the front and rear walls and the first and second end walls. The peripheral wall has one or more openings formed there through to allow fluid in the trough to drain from the trough to the building exterior when the door frame assembly is installed in the doorway with the front wall facing the building exterior. The end and rear walls are constructed and arranged to prevent fluid in the trough from flowing into the building interior.” (Baczuk col 1: lines 21-61)

Baczuk’s design is not a solution to this long felt need. First, the Baczuk sub-sill is an integral part of the door sill assembly, so that every door manufacturer would need to incorporate this proprietary.

Second, the Baczuk proposed higher capacity sub-sill does not address the fundamental problem of adequate drainage. The current invention provides a universal and effective sloped sill pan that addresses this long-felt need.

Third, Baczuk’s design does not address the leakage around the door frame, i.e. between the door frame and the rough opening. The Baczuk end pieces stop with the door frame. The long-felt need is to protect the entire rough opening from water penetration, and not only the door tread and frame. Current invention provides universal and effective sloped sill pan that addresses this long-felt need.

Fourth, Baczuk’s design has no integration with a building envelope.

In order to meet the long felt need the entire rough opening needs a sill pan that is integrated with the building enveloped. The current invention provides universal and effective sloped sill pan that addresses this long-felt need.

6. Buroughs (US 5921038)

In the following passages (emphasis added), Buroughs (US 5921038) which is cited by Wark and which was filed in January 1997, describes how the problem has been aggravated by modern construction techniques and tighter building sealing.

“Water in the form of rainwater, ice, snow, or the like, penetrates in and around building wall components, e.g., windows and doors, and then migrates downwardly beneath the wall component resulting in high moisture in the wall interior. **In traditional building construction** where the walls are formed of a wood frame with an outer cladding of wood, brick or concrete, this moisture has created some problems, although the porosity of the cladding allows the moisture to escape. Also, **openings in the exterior of the walls, either due to the nature of the materials used, or the addition of ventilation openings, have aided in moisture removal.**

In more modern construction, however, there is a trend toward the use of cladding materials that result in **a building that is as air tight as possible**. These materials include, for example, exterior insulation and finish systems (EIFS), insulated brick, polyethylene sheeting, and polyvinyl siding. **With these non-porous cladding materials, moisture entering the wall interior may be trapped, creating a highly moist environment that causes the wood frame components of the building to rot, and metal components to rust or corrode. In addition, the moist environment is a breeding ground for wood consuming insects, causing further decay. This problem is accelerated in hot and humid environments.**

Attempts have been made to prevent entry of water into the building wall interior by sealing or caulking entry points in and around wall components as the primary defense against water intrusion, or by installing flashing around the wall components to divert the water. These attempts have not been completely successful. **Sealants** are not only difficult to properly install, but tend to separate from the wall component or wall due to climatic conditions, building movement, the surface type, or chemical reactions. **Flashing** is also difficult to install and may tend to hold the water against the wall component, accelerating the decay.

The use of sealants and flashing is also limited to the attempted minimization of water collection in building walls in new construction, and the further collection in existing structures. These materials are of no value in addressing the problem of water that has already entered a building wall interior. Thus, with solutions presented in the prior art, water still enters the wall interior, and the problem is further compounded by the prevention of any evaporation of the water already in the wall interior.

The problem of water penetration has prevented the full use of new building cladding materials, and has resulted in many buildings with rotting framing structures, requiring extensive and expensive retrofitting. **Thus, there is a great need for an apparatus and method to prevent water from entering the wall interior of a building at wall components, and for the removal of water that has already collected within the wall interior.** As used herein, the term "water" refers to both liquid and airborne forms of water, while moisture is intended to refer to the water carried by the air in a humid environment." (Burroughs col 1:line 36 to col 2:line 3)

7. Walls and Ceilings Magazine, Nov. 2006

Below is the section from the article "Flashing and Integration of Windows (or Lack Thereof) With Weather-Resistive Barrier" published by Walls and Ceilings Magazine, Nov. 2006. Walls and Ceiling Magazine, is a national architectural magazine.

Our investigation of numerous building envelopes across the country reveals a high occurrence of wall failures stemming from deficiencies in window flashing and integration between windows (both flanged and non-flanged) and the weather-resistive wall barrier. These failures can be avoided through the execution of a properly designed, step-by-step process of window and flashing installation. The proof testing of full-scale mock-ups and follow-up testing during construction have shown these techniques to be successful.

For many windows, particularly residential grade, leakage inboard of window nailing flanges is a common occurrence and installation methods must anticipate and accommodate this leakage. At both flanged and non-flanged windows, waterproofing materials must extend to the interior to create watertight sill flashing pans that capture and drain any leakage from window frame joints or ganged mullions. Sill pans need to have an upturned interior leg, down-turned leg at the exterior and end dams that do not rely on sealant for waterproofing integrity.



Figure 7

This article shows a long-felt need for a sill pan that "capture and drain any leakage from window frame, joints, or ganged mullions" - in other words the entire rough opening. It also shows that integration of the sill pan and the weather-resistive barrier is a long-felt need. This shows that Baczuk's proposed solution which only covers a door sill and frame does not meet this long-felt need to protect entire rough opening. The current invention protects the entire rough opening.

8. DuPont Flashing Systems Installation Guidelines

The following is an excerpt from “DuPont Flashing Systems Installation Guidelines” which states:

“DuPont recommends the use of the SureSill™ Sloped Sill Pan™, manufactured by SureSill, Ltd, on all exterior doors and in certain applications on windows. This best practice ensures continuous support with positive slope to the exterior.” (emphasis added)

DuPont is a Fortune 100 company and the market leader in “building envelope products” with majority of market share in house wraps or weather-resistive barrier (WRB), and the most reputable brand for products used for window and door installation. As per DuPont, this is the first time DuPont has endorsed and is promoting a non-DuPont brand.

This recommendation directly relates to key features of the claims of the current invention- a sloped pan (“sloped upper portion”) and the continuous support provided by the “lengthwise oriented rear sill support” and the “lengthwise oriented front sill support comprising a plurality of drain gaps”. The end pieces directly relate to the commercial success of the current invention. First, the end pieces provide improved sealing relative to fixed length supports, caulking, or flashing. Second, the combination of end pieces and sill pan base permit the device to fit actual variations in rough opening widths. Third, the combination of end pieces and sill pan base allows for good integration with a building envelope and weather-resistive Barrier (WRB).

Door and window rough sill framing must be level or slightly sloped to the exterior to ensure proper drainage to the exterior. DuPont recommends the use of the SureSill™ Sloped Sill Pan™, manufactured by SureSill, Ltd, on all exterior doors and in certain applications on windows. This best practice ensures continuous support with positive slope to the exterior. Please contact your local DuPont™ Tyvek™ Specialist for additional information and installation instructions.

DO NOT STRETCH DuPont™ FlexWrap™ when installing along sills or jambs. DuPont™ FlexWrap™ is only intended to be stretched when covering corners or curved sections.

DuPont™ Flashing Systems products perform best when installed at temperatures above 25°F (-4°C).

Avoid placing DuPont™ Tyvek® Wrap Caps where flashing will be installed; however, DuPont™ Tyvek® Wrap Caps can be applied over the flashing.

Where buildings could be exposed to extreme weather conditions (e.g. sustained wind-driven rain above 50mph), install a high pressure skirt to help prevent water intrusion at the sill.

Priming is generally not required for adhering DuPont™ Flashing Systems products to most common building materials. However, adverse weather conditions or cold temperatures may require use of a primer to promote adhesion. Additionally, concrete, masonry, and fiber-faced exterior gypsum board require the use of approved primers. For primer recommendations, see page 2.

For additional guidelines and suggested sealants, please call 1-800-44-Tyvek (500-448-6836), visit our website at www.Construction.Tyvek.com, or consult your local DuPont™ Tyvek™ Specialist.

"DuPont recommends the use of the SureSill™ Sloped Sill Pan™, manufactured by SureSill, Ltd, on all exterior doors and in certain applications on windows. This best practice ensures continuous support with positive slope to the exterior. Please contact your local DuPont™ Tyvek™ Specialist for additional information and installation instructions."

9. Summary

Prior to the current invention, there has been no effective solution to this long-felt need. Proprietary door sills without sloped drainage, such as described by Baczuk, do not provide universal and effective solutions to water infiltration prevention and drainage for doors and windows. Prior art sloped supports such as Burroughs did not have commercial success because it did not provide efficient drainage due to lack of drainage path to the exterior, and therefore did not have a proper protection. Wark had no significant commercial acceptance because it does not provide continuous support to door sill and frame and is too expensive or not versatile enough- such as not providing effective solutions to variations in framed rough opening widths, for instance, or they require time consuming installation. The current invention provides an affordable solution that is field-adjustable to proper dimensions, and which provides superior strength of continuous or near-continuous support.

Appendix C- Evidence of Commercial Success

1. EDU article

The fourth paragraph of the EDU article presented above notes that **“It is due to these features that SureSill quickly became the number one sill pan on the market.”**

2. The Wark device

The Wark invention is marketed by a web site www.sillsaver.com. The web site lists only one dealer in US: Snyder Architectural Systems in Seattle, WA. The Wark invention was sold only in one dealership in US, SureSill is sold in over 2,000 locations in US, including Seattle, WA.



DISTRIBUTORS

WASHINGTON STATE, USA

Snyder Architectural Systems (Vaproshield)

Lee Snyder: 253-851-8200

Peter Vierthaler: 206-498-4708

BRITISH COLUMBIA, CANADA

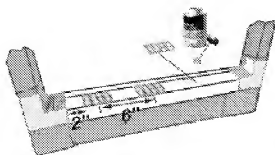
Scott Wark

Tel: 604-999-1576

Fax: 604-823-7434

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The long-felt need was not satisfied by the Wark device, and the Wark device does not appear to be commercially successful.



5. The spacers/supports must be installed at 6" on center starting 2" away from the corner pieces.

TIP: A dab of glue can be applied to the back side of the spacer or to the base. This will hold the spacer in position until the window is installed.

ATTENTION: For rain-screen applications the spacers should be glued onto the base protruding out by the thickness of the rain-screen and touching the back side of the window flange. Review this with your envelope consultant.

As described at step 5 of the installation instructions on the Wark website, spacers are installed after the sloped base and the corners are installed. For 3 foot door there are 6 spacers to install, for a 6 foot there are 12 spacers to install, for 12 foot window there are 24 spacers to install. The spacers are manufactured by a separate manufacturing process. Spacers were not manufactured by the same extrusion process as the base. The spacers can not be manufactured by the same single extrusion process as the base.

Below is the Price List from Snyder Architectural Systems (Vaproshield), a distributor listed on Sill Saver (Wark's) web site, with prices for Wark's proposed solution- the Vapro Sill Saver.

VAPROSILL SAVER						
Sill Pans	12'-0"	20/Box	12'-0" x 1-5/8" 12'-0" x 2" 12'-0" x 2-3/8" 12'-0" x 3-1/8"	1.75ms	Less than 1000 LP of Pan 2.30 /LP 29.60 /Box	More than 1000 LP of Pan 2.30 /LP 28.20 /Box
Spacer Supports Recommend 1 every 6'	1-5/8", 2", 2 3/8", 3-1/8"	800/Box	1-5/8", 2", 3/8", 3-1/8"	2 0.025 ps	Less than 1000 LP of Pan 0.73 /Each	More than 1000 LP of Pan 0.98 /Each
Corners 2 Per Sill Pan (1 Rt / 1 Lft) SOLD ONLY IN MULTIPLES OF 20	1-5/8", 2", 2 3/8", 3-1/8"	250/Box	1-5/8", 2", 3/8", 3-1/8"	2 0.05 ps	Less than 1000 LP of Pan 1.15 /Each	More than 1000 LP of Pan 0.98 /Each

The table above is from the Snyder's Price List, the cost for Wark's device.

It shows the cost for spacers (Spacer Supports) to be \$0.58 - \$0.73 each, which raises the cost of the Wark 2" sill pan by 55% - 64%.

Below is a quote for the SureSill 2" Sloped Sill Pan of the current invention, for the customer in Seattle, WA, so it could be compared with Wark's device from Snyder's Price List.



Home Depot Special Order
Vendor: Sure Sill LTD
Vendor SO # 00077167
Spec. Order SKU 907-558

To: Sergey Kobets, NW Building Systems, LLC
kobets@sergey@yahoo.com
Telephone (206) 355-4750
Fax (206) 377-3158

Date
5/29/2008
Page 1
Quote # SK20080520

Item #	Product	SKU	Model	Walk out price	Description	Suggested Order	
						Qty	Extended
1	Sloped Sill Pan™ 2-1/16" x80"	907-558	SS 2,06C 0R0	\$174.59	2-1/16" Sloped Sill Pans 154" long, Case of 20. NO CAPS	22	\$3,830.98
3	End Caps	907-558	SS 2,06C CPS	\$70.00	2-1/16" End Caps, 40 per box	15	\$105.00
4							
5	SUBTOTAL*				(Sales Tax NOT included)		\$4,749.98

NOTE *:

HD Associate, please reference this quote with you order.

The pricing includes one delivery of all items listed. This quote is valid for 30 days

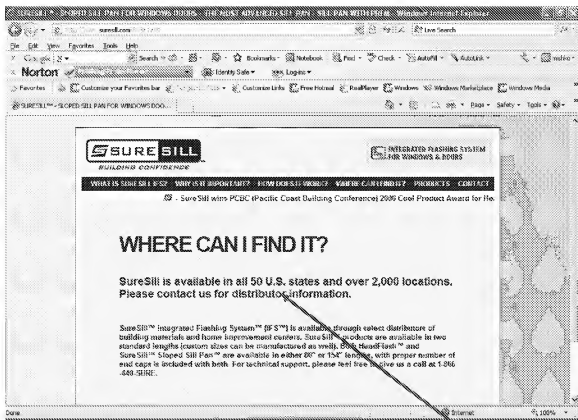
Subtotal includes ground delivery to the store or to the customer. If delivery is to the customer please add customer's address with your order and a contact name and telephone number. Add applicable local sales tax.

SURESILL, LTD.

INTEGRATED FLASHING SYSTEM FOR WINDOWS & DOORS
9201 BROWN LN, SUITE 111 AUSTIN, TEXAS 78754 U.S.A.
TEL. 512-231-5469 FAX 512-502-0007
WWW.SURESILL.COM

"SURESILL IS THE CADILLAC OF SILL PANS", Energy Design Update, July 2004.

The SureSill product is more competitive by not having separate spacers. It also takes less time for installation since there are no spacers to glue.



SureSill is available in all 50 U.S. states and over 2,000 locations. Please contact us for distributor information.

The long-felt need is satisfied by the SureSill device, and the SureSill device is sold in “over 2,000 US locations in 50 states”. SureSill device has significant commercial success.

Cost Analysis Wark (Vapro Sill Saver) vs. Present Invention (SureSill) for a 2' Sill Pan			
			9/2/2008
Brand	Sill Pan length in feet		
	3	6	12
Vapro Sill Saver (Snyder Price List)	\$13.58	\$24.86	\$47.42
SureSill (Home Depot Quote)*1	\$5.65	\$9.55	\$17.35
Cost Reduction in Materials Only by using SureSill	58%	62%	63%

NOTE 1 - Some dealers have lower prices for SureSill than Home Depot

Above is the comparison for the cost of materials for the sill pan for SureSill and vapor Sill Saver.

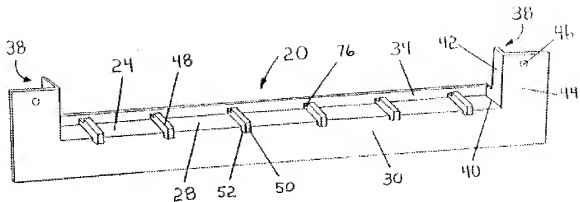
The comparison shows that for the same depth and the same length of the sill pan, and at the same location, SureSill is 58% - 63% less expensive than Vapro Sill Saver, which is due to added cost of spacers on Wark's proposed solution. In addition, assembly adds another 60% - 70% price difference for gluing the spacers, which makes Warks' solution 120% - 140% more expensive than SureSill. In addition, supports add additional SKU (item to inventory) which is another downside for commercial success of Warks' invention.

Added cost of separate spacers and added cost of labor to install the spacers makes Warks' solution significantly more expensive and more time consuming to install than the present invention. If length-wise supports were obvious then Wark would have made them before the current patent application, and significantly reduced the cost of the sill pan, reduced installation cost, and reduced the amount of SKUs.

The current invention has recessed sloped and longitudinal support ridges which provide continuous support for window and door sill, and are easy to install. The present invention can be manufactured by a single extrusion which allows for relatively inexpensive pricing. This means that the middle section is manufactured as a single piece, and here are no joints in the base for the entire opening.

The Wark invention is currently manufactured by extruding the sloped base. However, Wark “windows supports” 48, Fig 4, can not be manufactured in the same extrusion process with the sloped base. These windows supports must be manufactured in a separate manufacturing process such as injection molding and glued to the base in the field, as described on Wark’s web site www.sillsaver.com Per Wark’s specs on www.sillsaver.com support ridges are glued every 6”. There is additional cost to produce support ridges and additional labor to glue them. This requires additional time, skill, and material cost to assemble the sill pan. The current invention does not require separate ridges or additional gluing of support ridges. In addition, Wark invention does not provide continuous support but occasional support, which is a problem if window or door jamb legs, or a door sill is not supported. The current invention provides continuous support. For Wark’s invention to provide continuous support the support ridges would have to be glued very close to each other which would make the cost of the sill pan unreasonably high and very time consuming to assemble. The other option for Wark invention is to produce the slope base with support ridges by single injection molding, which would also be more expensive than a single extrusion but the ridges would not have to be glued to the base. The problem with that is there are limits in length of the injected sections and having sections that are glued together is not a very good option because of high probability that joints would leak over time.

Wark FIG 4:

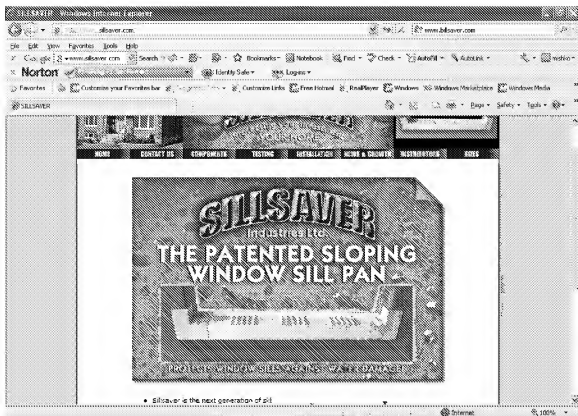


Wark invention Column 5, lines 14 – 22:

Several window supports 48 are spacedly disposed on sloping downwardly and outwardly upper surface 28 and stretch out forwardly from and perpendicularly to upstanding rear rib 34. Window supports 48 extend up to beyond front edge 32 of base 24, where they form front ends 50. The latter are continued downwards by spacers 52 with which they have coplanar outsurfaces. The top of upstanding rear rib 34 is relatively higher than the tops of window support 48.

Extrusion is pushing the hot plastic through the dye. Only longitudinal profile (ridges) can be extruded. Perpendicular ridges can not be manufactured by the same extrusion as the base. In the Wark invention, the sloped base can be manufactures by extrusion but not together with “window supports”, 48. “Window supports” have to be manufactured by a separate process such as injection molding or otherwise, and then glued to the slope. Present invention allows both the slope and the lateral support ridges to be manufactured by a single extrusion.

Below is a web page from www.sillsaver.com showing Wark’s device.



Above shows that Wark's device is made for windows, and not for doors which coincide with the patent granted to Wark.

1 WINDOW DRAIN

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates, in general, to drainage systems for buildings and, particularly, to a window drain. ⁵

In each of his claims, Wark mentions only "window drain" and not "door" or "door drain".

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as a basis for the claims and as representative basis for teaching one skilled in the art to variously employ the present invention in virtually any appropriately detailed structure.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. Window drain, adaptable to be positioned beneath a sill of window, window drain comprising said sill, opposed jambs and a window flange, said window drain including

a base having a horizontally extending lower surface and a sloping downwardly and outwardly upper surface, said base having a substantially rectangular shape in plan;

a front flange projecting perpendicularly and downwardly from a front edge of said base;

an upstanding rear rib situated at a rear edge of said base from which it perpendicularly extends;

an end flange, located at each lateral edge of said base, comprising an upstanding end wall projecting from said lateral edge and

a front wall coplanar with said front flange and extending upwardly and downwardly from said base, each of said end flanges being provided with openings adaptable to use attachment means for securing to a vertical stud of a window frame, when installed;

window support means, spacedly disposed on said sloping downwardly and outwardly upper surface and having coplanar tops; and

said window drain being adaptable to accommodate a window having a width, measured between the back of said sill and the back of said window flange, equal to the distance between the front face of said upstanding rear rib and said outsurfaces of said spacers.

2. Window drain, adaptable to be positioned beneath a sill of a window, window drain comprising, said sill, opposed jambs and a window flange, said window drain including

a base having a horizontally extending lower surface and a sloping downwardly and outwardly upper surface, said base having a substantially rectangular shape in plan;

a front flange projecting perpendicularly and downwardly from a front edge of said base;

an upstanding rear rib, situated proximate to a back edge of said base from which it perpendicularly extends, said upstanding rear rib being provided with several spaced apertures along its length;

a supplementary rear rib, situated behind and parallel to said upstanding rear rib and projecting from said back edge of said base;

an end flange, located at each lateral edge of said base, and comprising

an upstanding end wall, projecting from said lateral edge, and a front wall coplanar with said front flange and extending upwardly and downwardly from said base, each of said end flanges being provided with openings adaptable to use attachment means for securing said window drain when installed;

window support means, spacedly disposed on said sloping downwardly and outwardly upper surface and having tops coplanar with the top of said upstanding rear rib, the top of said supplementary rear rib being relatively higher; and

spacers disposed on said front flange;

said window drain is so designed, that the distance between said supplementary rear rib and the front faces of said spacers is adaptable to accommodate a window having the widest standard width, respec-

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tively the largest distance between the back edge of said sill and the back of said window flange; and said window drain is also so designed, that the distances between intermediary lines, which are situated between said supplementary rear rib and said upstanding rear rib, on one side, and the front faces of said spacers, on the other side, are adaptable to accommodate windows of intermediary widths, respectively intermediary distances between the back edge of said sill and the back of said window flange.

3. Window drain, adaptable to be positioned beneath a sill of a window, and comprises, said sill, opposed jambs and a window flange, said window drain including

a base having a horizontally extending lower surface and a sloping downwardly and outwardly upper surface, said base having a substantially rectangular shape in plan;

a front flange projecting perpendicularly and downwardly from a front edge of said base;

an upstanding rear rib, situated proximate to a back edge of said base from which base it perpendicularly extends;

a supplementary rear rib, situated behind and parallel to said upstanding rear rib and projecting from said back edge of said base;

an end flange located at each lateral edge of said base, each said end flange, comprising

an upstanding end wall projecting from said lateral edge and a front wall coplanar with said front flange and extending upwardly and downwardly from said base, each of said end flanges being provided with openings adaptable to use attachment means for securing said window drain when installed;

window support means, spacedly disposed on said upper surface and having its tops coplanar;

spacers disposed on said front flange; and

the tops of said upstanding rear rib and supplementary rear rib being coplanar and relatively higher than the tops of said window support means.

4. Window drain, as defined in claim 3, wherein when said window drain is used with a window having the narrowest standard width, said supplementary rear rib together with the part of said base between said upstanding rear rib and said supplementary rear rib are cut and discarded, whereby, when said window is installed, the back of said sill abuts the front of said upstanding rear rib.

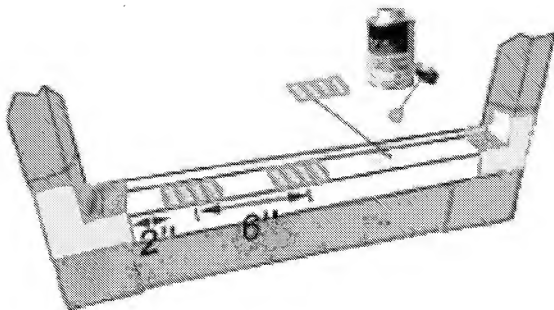
5. Window drain, as defined in claim 3, wherein when said window drain is used with a window having an intermediary width, or the largest standard width, the height of said upstanding rear rib is reduced by cutting it to the level of the tops of said window support means, while several spaced apertures are provided along the length of said upstanding rear rib.

6. Window drain, as defined in claim 1, wherein said support means comprises several window supports located on said upper surface and stretching out forwardly from said upstanding rear rib up to just beyond said front edge of said base, where they form front ends, coplanar with said spacers.

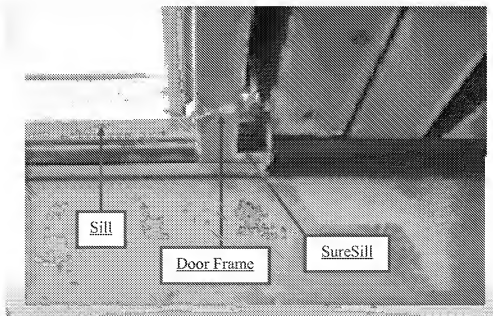
7. Window drain, as defined in claim 6, wherein said window supports are each provided, adjacent said upstanding rear rib, with a recess, thus several recesses are linearly located and are adaptable to lodge a compressible cord for enhancing the watertightness between said sill and said upstanding rear rib.

8. Claim as defined in claim 2 wherein said support means has each a truncated conic form.

* * * * *



Above is the assembly of Wark's device as posted on www.sillsaver.com. It shows that Wark's device has only occasional supports with 3" – 4" apart, and spaces among window supports.



Above is the interior photo of exterior door in the SureSill pan. It shows that door frame can be within few inches to almost next to the rough opening. Door frame is where the door panel is attached through hinges and the frame bares the entire weight of the door.

Door frame is typically $\frac{3}{4}$ " thick, and in order to properly support it the support ridges of the sloped sill pan should always be underneath the door frame.

Wark's device which is shown on the previous photo, does not have a continuous horizontal support that would assure the support underneath the door frame, but rather an occasional support which may or may not be underneath the frame. Wark's device does not meet long-felt need for proper support underneath doors. SureSill rear support ridge is continuous, and front support ridges are continuous with occasional narrow cuts for drainage. SureSill meets long-felt need for continuous support underneath door sill and door frame.

3. Fortifiber letter

The letter below shows compatibility of integrating SureSill with Fortifiber products. Fortifiber is one of the largest manufacturers of flashing and envelope products, such as: Moistop, EZ Flash, JumboTex, WeatherSmart House Wrap, etc.

The letter shows that SureSill has met the long-felt need for efficient sill pan, and effective integration with building envelope. It also shows commercial success in SureSill being accepted by a major company in building envelope products. Per Fortifiber, SureSill is the only sill pan to receive this type of recognition from them.



Fortifiber Building Systems Group™
Protecting Your World from the Elements™

55 Starkey Ave., P.O. Box 959, Attleboro, MA 02703 508-222-3500 fax 508-222-8831

November 28, 2005

Mr. Mishko Teodorovich
 President
 SureSill, Ltd.
 PO Box 202673
 Austin, TX 78720-2673

Dear Mishko,

We have completed our evaluation of your sill pan flashing piece in contact with our flashing system components: Fortiflash, EZ-Seal, and Moistop Sealant. We looked for signs of incompatibility between these materials both at room temperature and heat aged at 150°F for a period of 8 weeks and saw no sign of compatibility issues under these conditions. There was no loss of adhesion, discoloration or unusual softening of the adhesives or sealant as a result of being in contact with the sill pan material. The sill pan material showed no sign of softening or embrittlement as a result of being in contact with the flashing materials.

To the best of our knowledge using the test conditions above Fortifiber's Fortiflash, EZ-Seal and Moistop Sealant are compatible with SureSill's pan flashing material.

Sincerely,

Fred S. Baker

Fred Baker
 Technical Director

cc: J. Rossner, B. Hill

Ref: ATLAB 566

4. Protecto Wrap letter

Below is a letter from Protecto Wrap Company, from Denver, CO. that states : "When used with SureSill™ products, Protecto Wrap Company products provide a complete waterproofing system for the building envelope, protecting against moisture intrusion, and infiltration. Industry leaders Protecto Wrap Company® and SureSill™ have created

this partnership to provide the Home Builders, Architects and Specifiers with the only complete waterproofing system for the fenestration industry”.

ProtectoWrap is one of major manufacturers of weatherization products, such as window and door tapes, weather-resistive barrier and other waterproofing products.

The letter shows that SureSill has met the long-felt need for efficient sill pan, and effective integration with building envelope. It also shows commercial success in SureSill being accepted by a major company in building envelope products. Per Protecto Wrap, SureSill is the only sill pan to receive this type of recognition from them.



PROTECTO WRAP COMPANY AND SURESILL COMPATIBILITY LETTER

11/12/07

SureSill™ products were tested with Protecto Wrap Company® products for "compatibility" and the testing samples showed no signs of loss of adhesion, discoloration, deterioration or any adverse reactions.

The following products are compatible and approved for installation with each other. When installed as recommended Protecto Wrap Company® will uphold the current warranty for Protecto Wrap Company® products.

SureSill™ Sloped Sill Pan™ and HeadFlash™ are compatible and approved for installation with following Protecto Wrap Company® products:

- Self-Adhered Flashing
 - Butyl Adhesive: SafSeal Systems 6810
 - ButylHybrid Adhesive: BT25XL, Protecto Seal 45, PW 100-40, PW 100-60, Stucco Tape, Protecto Flex
- Sealant: Protecto Sealant 25XL
- Weather Resistive Barriers (WRB): All Protecto Wrap Company® housewraps

HeadFlash-Flex™ is compatible and approved for installation with following Protecto Wrap Company® products.

- Self-Adhered Flashing
 - Butyl Adhesive: SafSeal Systems 6810
 - ButylHybrid Adhesive: BT25XL, Protecto Seal 45, PW 100-40, PW 100-60, Stucco Tape, Protecto Flex
- NOTE: The ButylHybrid adhesive on BT25XL, Protecto Seal 45, PW 100-40, PW 100-60, Stucco Tape, Protecto Flex should not be in direct contact with HeadFlash-Flex™. HeadFlash-Flex™ should be placed over the back of Self-Adhered Flashing where there is no direct contact with the ButylHybrid adhesive.
- Sealant: Protecto Sealant 25XL
- Weather Resistive Barriers (WRB): All Protecto Wrap Company® housewraps

SureCorner™ is compatible and approved for installation with following Protecto Wrap Company® products:

- Self-Adhered Flashing
 - Butyl Adhesive: SafSeal Systems 6810
 - ButylHybrid Adhesive: BT25XL, Protecto Seal 45, PW 100-40, PW 100-60, Stucco Tape, Protecto Flex
- NOTE: The ButylHybrid adhesive on BT25XL, Protecto Seal 45, PW 100-40, PW 100-60, Stucco Tape, Protecto Flex should not be in direct contact with SureCorner™. SureCorner™ should be placed over the back of Self-Adhered Flashing where there is no direct contact with the ButylHybrid adhesive.
- Sealant: Protecto Sealant 25XL
- Weather Resistive Barriers (WRB): All Protecto Wrap Company® housewraps

When used with SureSill™ products, Protecto Wrap Company® products provide a complete waterproofing system for the building envelope, protecting against moisture intrusion and infiltration. Industry leaders, Protecto Wrap Company® and SureSill™, have created this partnership to provide the Home Builders, Architects and Specifiers with the only complete waterproofing system for the fenestration industry.


Timothy R. Schneider
Vice President of Sales & Marketing of Protecto Wrap Company®

Protecto Wrap Company

5. DuPont letter

Below is a letter from DuPont. DuPont states that “ When using the SureSill™ products we believe that DuPont™ Flashing System self adhered flashing products, DuPont™ FlexWrap™ and DuPont StraightFlash™, are highly effective in providing a durable, moisture-proof seal for continuous integration with the water-resistive barrier, and in particular Tyvek® based products, thus completing the continuous integration with the Building Envelope.

Mr. James D. Katsaros, PhD, is also a committee member of ASTM 2112, and a Chair of the window and door installation committee of the FMA (Fenestration Manufacturer’s Association).

DuPont is the leader in weatherization industry with the largest market share in weather-resistive barrier products, and a market leader in innovation and quality.

The letter shows that SureSill has met the long-felt need for efficient sill pan, and effective integration with building envelope. It also shows commercial success by SureSill being accepted by industry leader in building envelope products. Per DuPont, SureSill is the only sill pan to receive this type of recognition from them.

|



Tyvek®

Weatherization Systems

June 5, 2006

Mishko Teodorovich, President
SureSill™, LTD.
6410 Yaupon Drive
PO Box 202673
Austin, TX 78720-2673

Mishko,

We have tested the SureSill™ Flashing System, including the SureSill™ sill pan and HeadFlash™ drip cap, with our DuPont Flashing Systems products for "compatibility," as defined the ASTM C717-96a Standard Terminology of Building Seals and Sealants. We found the products to be compatible per this definition, in that there were no adverse affects between the products.

To test for compatibility, the DuPont Flashing products, FlexWrap™ and StraightFlash™, were adhered to the SureSill™ products and placed in an oven at 180° F for 7 days. After the heat exposure, the products were removed and observed for any physical deterioration or adverse interactions, which were not found.

When using the SureSill™ products, we believe the DuPont™ Flashing Systems self-adhered flashing products, DuPont™ FlexWrap™ and DuPont StraightFlash™, are highly effective in providing a durable, moisture-proof seal for continuous integration with the water-resistive barrier, and in particular Tyvek® based products, thus completing the continuous integration with the Building Envelope.

Sincerely,

James D. Kaisaros, PhD
DuPont Flashing Systems Development Leader
804-383-3872

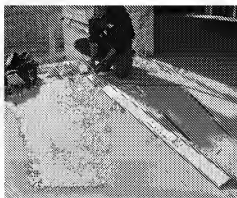
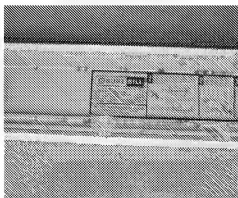
When using the SureSill™ products, we believe the DuPont™ Flashing Systems self-adhered flashing products, DuPont™ FlexWrap™ and DuPont StraightFlash™, are highly effective in providing a durable, moisture-proof seal for continuous integration with the water-resistive barrier, and in particular Tyvek® based products, thus completing the continuous integration with the Building Envelope.

6. Stock Building Supply Installation Guide

Below are the Exterior Door Installation Guidelines, from Stock Building Supply. Stock Supply is one of the largest distributors of building materials with over 300 locations in US. This shows commercial success, difference between the sill and the sill pan and how SureSill protects the whole rough opening. These materials show the commercial success of SureSill by being accepted by a major distributor of building materials for installation of exterior doors.

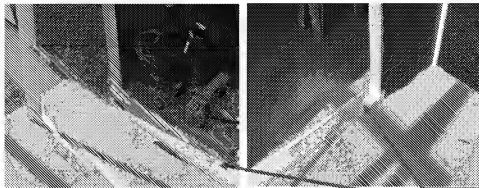


Transfer the previous measurement to the SureSill pan. Make sure to follow all directions stated on the installation guide provided by SureSill and printed on the product. Additional details are provided at www.suresill.com.



STOCK Building Supply
A WALKER COMPANY

Always dry fit the SureSill door pan to ensure that the measurement and the cut were made correctly. The end caps should fit tightly against rough opening.

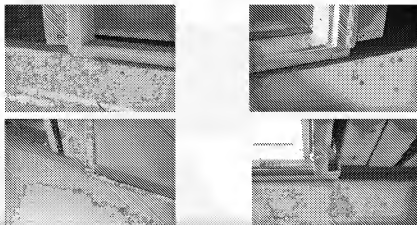


SureSill

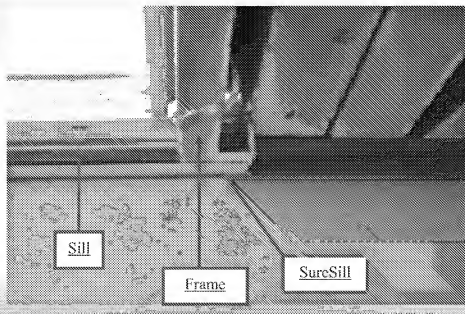
STOCK Building Supply

The above shows commercial success of SureSill by being accepted by a major distributor of building materials for installation of exterior doors.

These are pictures of what the pan should look like after the door unit is installed. Notice the inside gap along the sill to allow water to travel over the sill but still fall into the SureSill door pan. We do not want the inside gap to be more than 1/8" to 3/16".



STOCK Building Supply

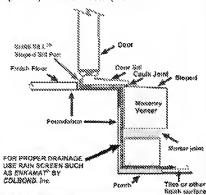


This Interior side detail shows that SureSill fits the entire rough opening beyond just sill and frame.

NOTE: Proper drainage should be provided for SureSill pan during and after construction to allow for proper drainage to exterior. Below are drainage details recommended by SureSill. If you have different job conditions contact SureSill directly. You can find all contact information on www.suresill.com. Give a copy of the Door Drainage Detail to builder/superintendent.

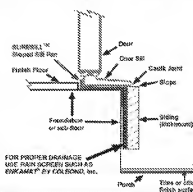
DOOR DRAIN DETAIL

Step down porch with masonry veneer



DOOR DRAIN DETAIL

Step down porch with kickboard underneath door sill



STOCK Building Supply

The above shows that sill and sill pan are not the same, and the integration between SureSill and the building envelope.

7. Home Depot Display

The figure below shows SureSill pan display and product for sale in Home Depot. This shows a commercial success by SureSill being accepted by a major big-box retailer. Per Home Depot, SureSill is the only sill pan sold by Home Depot.



8. Summary

The Suresill sloped sill pan, built and installed according to the claims of the current invention, is commercially successful and is addressing a long-felt need in the building industry for cost-effective and reliable sill pan solution to preventing water intrusion and associated mold damage to structures.

The current invention is commercially successful because it offers an improved product with positive slope to the exterior and the continuous or near continuous support for door and window sills and frame, simpler installation, and a substantially reduced cost because of design change. The current invention has strong industry recommendations by industry

leaders such as DuPont, Endura Products, Protecto Wrap Company, and Fortifiber, and is recognized by retailers and distributors such as Home Depot, Stock Building Supply, BMC West, 84 Lumber Company, ProBuild, Huttig, TM Cobb, OrePac, Weatherization Partners

DECLARATION

I, Mishko Teodorovich further state that the above statements were made with the knowledge that willful false statements and the like are punishable by fine and/or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that any such willful statement may jeopardize the validity of this application or any patent resulting therefrom.

Date: September 17, 2008.

A handwritten signature in black ink that reads "Mishko Teodorovich". The signature is written in a cursive, flowing style.

Mishko Teodorovich